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10/660,907	09/11/2003	Salih Burak Gokturk	60045-0043	6370

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/660,907	GOKTURK ET AL.	
	Examiner	Art Unit	
	Jordan Kuhn	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/21/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's response to the last Office Action, filed December 4, 2006, has been entered and made of record.

Response to Arguments

1. Applicant has amended claims 20 and 22 in an attempt to overcome the rejection of claim 22 under 35 U.S.C. 112 second paragraph. However, the examiner maintains that claim 22 still fails to further limit claim 20, and therefore the rejection is maintained.

Applicant has amended claim 31 in an attempt to overcome the rejection of claim 31 under 35 U.S.C. 112 second paragraph. The rejection of claim 31 under 35 U.S.C. 112 second paragraph is withdrawn. However, the applicant has created another issue in the process of amending, and an objection to the claim is presented below.

Applicant's arguments regarding the rejection of claims 1, 2, 5, 6, 8-11, and 14 under 35 U.S.C. 102(a) have been fully considered but they are not persuasive. Applicant argues that Yasui only acquires data relating to a slice of an object and does not disclose "capturing three-dimensional depth images". However, the examiner disagrees. The applicant is directed additionally to column 6 lines 21-32 of Yasui, wherein Yasui discloses using a plurality of infrared beam sheets in order to generate fine three-dimensional shape data. The examiner maintains that Yasui reads on the claimed invention.

Applicant's arguments regarding the rejection of claims 3, 4 and 12 under 35 U.S.C. 103 have been fully considered but they are not persuasive. Applicant argues that Breed does not

disclose determining where occupant components are relative to an airbag. The examiner disagrees. The applicant is directed to paragraph 99 of Breed, wherein Breed discloses determining the location of various parts of the driver relative to the airbag. The examiner further maintains that it would have been obvious to modify Yasui by Breed as discussed below in the rejection of claims 3, 4, and 12.

Applicant's arguments regarding the rejection of claim 13 under 35 U.S.C. 103 have been fully considered but they are not persuasive. Applicant states "Clearly if Yasui could acquire three-dimensional data, he would not need Adolph, and if Adolph's IR sensor could acquire three-dimensional data, he would not need all of his other sensors". The examiner disagrees with applicant's logic. Adolph is used in the rejection of claim 13 to show the teaching of specifically locating appendages relative to an airbag location, and therefore the examiner does not see the relevance of applicant's assertion. Furthermore, claim 13 is rejected over the combination of Yasui, Breed, and Adolph, and therefore all arguments should address this entire combination.

Applicant's arguments regarding the rejection of claim 7 under 35 U.S.C. 103 have been fully considered but they are not persuasive. Applicant argues "neither Yasui, Adolph, nor Hosoda describe a system or method whereby three-dimensional images are acquired". The examiner disagrees for the same reasons as discussed above in response to the arguments relating to the rejections under 35 U.S.C. 102(a) over Yasui.

Applicant's arguments regarding the rejection of claims 15-25 and 28-30 under 35 U.S.C. 103 have been fully considered but they are not persuasive. The examiner disagrees with applicant's arguments relating to claims 15-25 and 28-30 for the same reasons as discussed above in response to the arguments relating to the rejections under 35 U.S.C. 102(a) over Yasui.

Claim Objections

2. Claim 15 is objected to because of the following informalities: Amended claim 15 recites "including including light emitted by said light source". Examiner believes that this should read --including light emitted by said light source--. Appropriate correction is required.

3. Claim 31 is objected to because of the following informalities: Amended claim 31 recites "a common common mode reset circuit". Examiner believes that this should read --a common mode reset circuit--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 22, this claim recites essentially the same limitations as the claim on which it depends (claim 20). It therefore does not further limit claim 20.

Applicant is advised that should claim 20 be found allowable, claim 22 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-2, 5-6, 8-11, and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Yasui (US Patent No 6,422,598).

Regarding **claim 1**, Yasui discloses an occupant protecting apparatus comprising illuminating an area with an infrared beam sheet, capturing images of the area using an image sensor in order to obtain the three-dimensional shape of a passenger in the area, using the three-dimensional data in order to classify the passenger and find the position of the passenger, as disclosed at column 4 lines 20-39 and column 5 lines 13-67 and also at column 6 lines 21-32 (as discussed above), further comprising when an acceleration greater than a threshold is detected by an acceleration sensor it is determined that a crash may have occurred and the image capture frame rate is increased while the resolution of the image capture resolution is decreased to a one dimensional image in order to accommodate the increase in frame rate, further comprising acquiring occupancy information after the crash and indicating a airbag deployment level based on the occupancy information, as disclosed at column 6 line 63 – column7 line 44, which reads on "(a) repeatedly capturing three-dimensional depth images of a scene that includes a region of a vehicle seat; (b) repeatedly determining occupancy information from at least one of said three-dimensional captured depth images; (c) upon occurrence of an airbag-deployment triggering

event repeating step (a) and step (b) more frequently than before occurrence of said airbag-deployment triggering event; and (d) indicating airbag deployment level based at least in part on occupancy information determined after occurrence of said airbag-deployment triggering event".

Regarding **claim 2**, Yasui discloses everything as applied above (see claim 1). Yasui further discloses determining the position of the passenger in order to determine the passenger's proximity to an airbag, as disclosed at column 5 lines 56-67, which reads on "wherein step (b) includes determining position information of an occupant on said vehicle seat".

Regarding **claim 5**, Yasui discloses everything as applied above (see claim 1). Yasui discloses as discussed above, classifying the passenger based on three-dimensional data, which reads on "further including classifying said object from at least one of said captured depth images".

Regarding **claim 6**, Yasui discloses everything as applied above (see claim 5). Yasui discloses as discussed above where airbag deployment is based on passenger information including passenger classification, therefore classification is performed before deployment of the airbag is triggered, which reads on "wherein classifying said object from at least one of said captured depth images is performed triggered deployment of said airbag".

Regarding **claim 8**, Yasui discloses everything as applied above (see claim 1). Yasui further discloses where capturing a reduced resolution image after a possible crash occurs at a rate of more than 1000 frames per second, as disclosed at column 7 line 10-12, which reads on "wherein a single occurrence of step (a) and step (b) and step (c) requires less than about 100 ms.".

Regarding **claim 9**, Yasui discloses everything as applied above (see claim 1). As discussed above, Yasui discloses capturing images of lower resolution at an increased rate, after a possible crash, which reads on "wherein at least one of step (a0 step (b) and step (c) includes capturing at least one depth image with lower resolution than was used before occurrence of said airbag-deployment triggering event".

Regarding **claim 10**, Yasui discloses everything as applied above (see claim 1). Yasui further discloses not deploying an airbag if a passenger is extremely close to the airbag and also discloses deploying an airbag with a weak force if a passenger is slightly close to the airbag, as disclosed at column 5 lines 56-67, which reads on "wherein step of indicating the deployment level of the airbag based at least in part on the occupancy information includes lowering the deployment level because the occupant is less than a maximum distance from an area from which the airbag is to be deployed".

Regarding **claim 11**, Yasui discloses everything as applied above (see claim 1). Yasui discloses as discussed above not deploying an airbag if a passenger is extremely close to the airbag and also discloses deploying an airbag with a weak force if a passenger is slightly close to the airbag, therefore if a passenger is not extremely close or slightly close to the airbag, the airbag will be deployed with full force, which reads on "wherein step (d) includes lowering deployment level when said occupant is less than a maximum distance from an area from which said airbag is to be deployed".

Regarding **claim 14**, Yasui discloses everything as applied above (see claim 1). Yasui discloses as discussed above not deploying an airbag if a passenger is extremely close to the

airbag, which reads on "wherein step (d) includes disabling airbag deployment when said occupant is too close to an area from which said airbag is to be deployed".

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 3-4, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui in view of Breed et al. (US Pub No 2001/0003168), hereinafter referenced as Breed.

Regarding **claim 3**, Yasui discloses everything as applied above (see claim 1). As discussed above, Yasui discloses finding the position of a passenger relative to the position of an airbag. Yasui further discloses locating the three-dimensional position of the head of the passenger, and it would therefore obvious that the position of the head relative to the airbag is determined, however Yasui does not specifically disclose determining where a designated component of the occupant is in relation to the airbag. However, the examiner maintains that it was well known in the art to provide for determining where a designated component of an occupant is in relation to an airbag, as taught by Breed.

In the same field of endeavor, Breed discloses a vehicular occupant detection method comprising capturing images of an area illuminated with infrared light, and determining the position of various parts of an occupant relative to the airbag, as disclosed at paragraph 99,

which reads on "wherein step (b) includes determining where a designated component of said occupant is relative to an area from which said airbag is to be deployed".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing for determining where a designated component of the occupant is in relation to the airbag, as taught by Breed, for the purpose of altering airbag deployment based on the position of specific parts of the occupant rather than overall relative position, thereby improving safety.

Regarding **claim 4**, Yasui and Breed disclose everything as applied above (see claim 3). Breed further discloses where the various parts include the head, chest, and torso of the occupant, as disclosed at paragraph 99, which reads on "wherein determining where a designated component of the occupant is includes determining where at least one of a head and torso of said occupant is relative to said area from which said airbag is to be deployed".

Regarding **claim 12**, Yasui discloses everything as applied above (see claim 1). However, Yasui fails to specifically disclose determining the pose of the occupant. However, the examiner maintains that it was well known the art to determine the pose of an occupant in an occupant monitoring system, as taught by Breed.

In the same field of endeavor, Breed discloses a vehicular occupant detection method comprising capturing images of an area illuminated with infrared light and determining the position of various parts of an occupant relative to the airbag, which indicates pose information, as disclosed at paragraph 99, which reads on "wherein step (b) includes determining a pose of said occupant".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing determining the pose of the occupant, as taught by Breed, for the purpose of further classifying the occupant based on pose and altering the deployment of the airbag accordingly in order to further improve safety.

10. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui in view of Breed further in view of Adolph et al. (US Patent No 5,785,347), hereinafter referenced as Adolph.

Regarding **claim 13**, Yasui and Breed disclose everything as applied above (see claim 12). However, Yasui and Breed fail to specifically disclose determining whether an extremity of the occupant is extended toward the airbag. However, the examiner maintains that it was well known in the art to determine whether an extremity of an occupant is extended toward an airbag, as taught by Adolph.

In the same field of endeavor, Adolph discloses an occupant sensing system comprising an infrared sensor for detecting the position of a vehicle occupant comprising locating the position of an occupant's appendages relative to the airbag location, as disclosed at column 4 lines 41-58, which reads on "determining a pose of said occupant includes determining whether an extremity of said occupant is extended towards an area from which said airbag is to be deployed".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui and Breed, by providing for determining whether an extremity of the occupant is extended toward the airbag, as taught by Adolph, for the purpose of improving the safety of the system by deploying the airbag with less force when an occupants

extremity is too close to the airbag location since the force exerted by the airbag would be too strong and may cause serious injury (column 4 line 46).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui in view of Hosoda (US Patent No 6,116,638).

Regarding **claim 7**, Yasui discloses everything as applied above (see claim 6). However, although it can be assumed that Yasui's system starts up upon vehicle start-up, Yasui does not specifically disclose classifying the passenger immediately upon vehicle start-up. However, the examiner maintains that it was well known in the art for a system to classify an occupant immediately upon vehicle start-up, as taught by Hosoda.

In the same field of endeavor, Hosoda discloses an airbag system comprising upon vehicle ignition, reading sensors to determine if there is a front facing child seat or a rear facing child seat present in a monitored area, as disclosed at column 13 line 45 – column 14 line 34, which reads on "wherein classifying said object from at least one of said captured depth images is performed immediately after start-up of said vehicle".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing for classifying the passenger immediately upon vehicle start-up, as taught by Hosoda, for the purpose of providing a safe environment for the passenger from the moment the car is started, because it is unknown when an accident will occur, for instance, a running but stationary vehicle may be hit by a moving vehicle, wherein airbag protection based on classification is necessary.

12. Claims 15-25 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui in view of Stopper et al. (US Patent No 6,302,438), hereinafter referenced as Stopper.

Regarding **claim 15**, Yasui discloses everything as applied above in the rejection of claim 1. Yasui further discloses where the image sensor is a CMOS type image sensor comprising an array of light-sensitive pixels which capture reflected light from the scene, as disclosed at column 6 line 63 – column 7 line 33, which reads on "an array of light-sensitive pixels disposed to capture reflected light from said scene, including light emitted by said light source, such that in at least one scene capture, three-dimensional data representing said scene are captured". However, Yasui fails to specifically disclose determining the depth information based on a time of flight characteristic of the reflected light. However, the examiner maintains that it was well known in the art to determine occupant depth information based on a time of flight characteristic of reflected light, as taught by Stopper.

In the same field of endeavor, Stopper discloses an occupant detection system comprising measuring range information of an occupant by using the time of flight of light reflected in a scene, as disclosed at column 13 lines 12-33, which reads on "processing resources to determine depth information for an object in said scene based upon at least one time-of-flight characteristic of reflected light emitted by said light source and captured by said array, said processing resources configured to determine occupancy data for said object based upon reflected light from said scene captured by said array".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui, by providing determining the depth information based on a time of flight characteristic of the reflected light, as taught by Stopper, for the purpose of providing a method to determine depth information that can be performed in real time and is responsive to typical occupant motion (column 13 lines 9-11).

Regarding **claim 16**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui further discloses an electronic control unit that controls deployment of the airbag when a crash occurs, as disclosed at column 4 lines 20-39, which reads on "wherein said processing resource communicate airbag deployment level, responsive to data indicating occurrence of a collision of said vehicle, to an airbag actuating device".

Regarding **claim 17**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui discloses as discussed above, illuminating an area with an infrared beam sheet, which reads on "wherein said light source emits a modulated infrared light".

Regarding **claim 18**, Yasui and Stopper disclose everything as applied above (see claim 17). Stopper further discloses where the time of flight includes a phase shift between the transmitter and the receiver, as disclosed at column 12 lines 40-55 and column 13 lines 12-33, which reads on "wherein said time-of-flight characteristic includes phase shift between modulated light emitted from said light source and reflected modulated light captured by said array of light-sensitive pixels".

Regarding **claim 19**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui discloses as discussed above, where the image sensor is a CMOS type image sensor, which reads on "wherein said array of light-sensitive pixels is formed on complementary metal oxide semiconductor device".

Regarding **claim 20**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui discloses as discussed above determining classification based on reflected light captured by the CMOS type image sensor, which reads on "wherein said processing resources

are configured to determine occupancy classification based on capture by said array of light-sensitive pixels of reflected light emitted by said light source".

Regarding **claim 21**, Yasui and Stopper disclose everything as applied above (see claim 20). Yasui further discloses classifying the passenger as an adult, as a child, or as no passenger, as disclosed at column 5 line 29-55, which reads on "wherein the occupancy classification includes at least a first class including an adult, a second class including at least one of a child and a child seat, and a third class representing absence of any occupant".

Regarding **claim 22**, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 20.

Regarding **claim 23**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui discloses as discussed above, determining occupant position relative to airbag position using reflected light captured by the CMOS sensor, which reads on "wherein said processing resources are configured to determine occupant position relative to a site from which said airbag is deployed using reflected light from said light source captured on said array of light-sensitive pixels".

Regarding **claim 24**, Yasui and Stopper disclose everything as applied above (see claim 21). Yasui further discloses not deploying the airbag or deploying the airbag with a weak force if the passenger is classified as a child, as disclosed at column 5 lines 43-46, which reads on "wherein said processing resources are configured to signal data indicating at east one of a partial deployment level and zero deployment level based on occupancy classification responsive to data indicating collision of said vehicle has occurred".

Regarding **claim 25**, Yasui and Stopper disclose everything as applied above (see claim 23). Yasui discloses as discussed above, not deploying an airbag if a passenger is extremely close to the airbag and also discloses deploying an airbag with a weak force if a passenger is slightly close to the airbag, which reads on "wherein said processing resources are configured to signal data indicating at least one of a partial deployment level and a zero deployment level based on occupancy position responsive to data indicating collision of said vehicle has occurred".

Regarding **claim 28**, Yasui and Stopper disclose everything as applied above (see claim 15). Yasui further discloses filtering out ambient light so that only reflected infrared light is detected by the image sensor, as disclosed at column 4 lines 57-67. However, Yasui and Stopper fail to specifically disclose using an optical sensor to filter ambient light. However, the examiner takes OFFICIAL NOTICE that it was extremely well known in the art to filter out ambient light using an optical filter. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yasui and Stopper by filtering out ambient light by using an optical filter for the purpose of decreasing processing and having more control over the filtering out of ambient light under various conditions.

Regarding **claim 29**, Yasui and Stopper disclose everything as applied above (see claim 28). However, Yasui and Stopper fail to specifically disclose an optical filter with low incidence angles in order to maintain a narrow interference band. However, the examiner takes OFFICIAL NOTICE that it was extremely well known in the art that when using an optical filter, the range of light filtered out will depend on the incidence angle of the filter, and when filtering out ambient light for the purpose of only detecting infrared light, obviously a narrow interference

band is needed, which is accomplished by having a low level of incidence. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yasui and Stopper by providing an optical filter, with low incidence angles in order to maintain a narrow interference band, for filtering out ambient light for the purpose of effectively filtering out light not within the infrared spectrum, by having a narrow interference band.

Regarding **claim 30**, Yasui and Stopper disclose everything as applied above (see claim 20). However, Yasui and Stopper fail to specifically disclose enhancing pixel sensitivity by using an electrical noise reduction filter. However, the examiner takes OFFICIAL NOTICE that it was extremely well known in the art to enhance pixel sensitivity of a CMOS image sensor by using an electrical noise reduction filter. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Yasui and Stopper, by providing for enhancing pixel sensitivity of the CMOS image sensor by using an electrical noise reduction filter, for the purpose of more precisely locating the position of the passenger.

13. Claims 26-27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yasui in view of Stopper further in view of Breed.

Regarding **claim 26**, Yasui and Stopper disclose everything as applied above (see claim 23). Yasui further discloses determining the longitudinal motion of the occupant, as disclosed at column 7 lines 25-26. However, Yasui and Stopper fail to specifically disclose tracking the occupant relative to the position of the airbag. However, the examiner maintains that it was well known in the art to track an occupant relative to the position of an airbag, as taught by Breed.

In the same field of endeavor, Breed discloses a vehicular occupant detection method comprising tracking the position on a passenger's head and chest relative to the known location

of the airbag based on tracking selected pixels, as disclosed at paragraphs 116-117, which reads on "wherein said processing resources are configured to identify a tracking feature of said occupant so as to track said occupant relative to a site from which said airbag is deployed".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui and Stopper, by providing for tracking the occupant relative to the position of the airbag, as taught by Breed, for the purpose of detecting sudden changes in position of an occupant thereby signifying a collision in the case that other collision sensors fail.

Regarding **claim 27**, Yasui and Stopper disclose everything as applied above (see claim 23). Breed discloses everything as applied above in the rejection of claim 26, and further discloses where the passenger is tracked based on position data captured from light reflected on a CMOS array, as disclosed at paragraph 117, which reads on "wherein said processing resources are configured to identify a tracking features of said occupant based on scene-reflected light captured on said array of light-sensitive pixels".

Regarding **claim 31**, Yasui and Stopper disclose everything as applied above (see claim 30). However, Yasui and Stopper fail to disclose a method for avoiding pixel saturation. However, the examiner maintains that it was well known in the art to provide a method for avoiding pixel saturation in a CMOS image sensor, as taught by Breed.

In the same field of endeavor, Breed discloses a vehicular occupant detection apparatus comprising a CMOS camera comprising technology that prevents image saturation, as disclosed at paragraph 137, which reads on "further comprising a common mode reset circuit coupled to said array of pixels to at least reduce pixel saturation".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Yasui and Stopper, by providing a method for avoiding pixel saturation in a CMOS image sensor, as taught by Breed, for the purpose of allowing the system to work in bright sunlight (paragraph 137).

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan Kuhn whose telephone number is 571-272-4295. The examiner can normally be reached on M-F 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jordan Kuhn
Examiner
Art Unit 2624

BHAVESH M MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600